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WVGHSP

WEST VIRGINIA GOVERNOR'S
HIGHWAY SAFETY PROGRAM

West Virginia

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Observational Survey of Seat Belt Use

**Division of Motor Vehicles
West Virginia Department of Transportation**

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_Earl Ray Tomblin
Governor
State of West Virginia_

_Paul A Mattox, Jr., P.E.
Secretary
Department of Transportation_

_Pat Reed
Commissioner
Division of Motor Vehicles_

Mountain State Criminal Justice Research Services, LLC
Charleston, West Virginia

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About MSCJRS…

Mountain State Criminal Justice Research Services (MSCJRS) is a private research company that conducts criminal justice and social science research and offers consultation, training, and grant-writing services to government agencies, nonprofit institutions, and private businesses. MSCJRS seeks to improve policy and practice through research and analysis and provides consultation to governmental and nongovernmental entities in the areas of grant-writing and program development.

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Introduction

This report represents an integral part of WV's efforts to monitor and increase seat belt use in the state. The primary purpose of this report is to systematically document the seat belt use rate and identify the primary sources of variation in seat belt use for the state of West Virginia. The 2015 West Virginia Observational Survey of Seat Belt Use was conducted under the direction of the West Virginia Division of Motor Vehicles, Governor's Highway Seat Program (GHSP).

In 2011, the National Highway Traffic Seat Administration (NHTSA) issued new Uniform Criteria for State Observational Surveys of Seat Belt Use. The revised requirements were due in part to technological improvements in road inventories and greater knowledge of the factors that might affect survey accuracy and reliability of estimates. Thus, NHTSA revised the Uniform Criteria so that future surveys would give States more accurate data to guide their occupant protection programs. The current report represents WV's response to the requirement to submit to NHTSA a study and data collection protocol for an annual state survey to estimate passenger vehicle occupant restraint use.

The methodology described in this report is fully compliant with the Uniform Criteria and was used to guide the implementation and completion of WV's 2015 seat belt survey. While the present survey design and methodology is similar to years past, it has been updated to meet NHTSA's new requirements. The survey utilized a multi-stage, stratified cluster sampling procedure to identify 132 sites for vehicle and occupant observations. Observations were conducted in 14 counties in the state stratified by three regions, with 8 to 10 observation sites per county.

Observers recorded seat belt information on 20,312 drivers and 5,846 outboard front seat passengers for a total of 26,158 observations. However, observers were not able to record seat belt use for 171 observations. As a result, seat belt use was calculated based on observations for 20,181 drivers and 5,806 passengers, resulting in a statewide nonresponse rate of 0.65% for the 2015 survey, compared to a nonresponse rate of 7.68% for the 2013 survey.

The 2015 seat belt rate in WV is estimated at 89.0%, slightly up from 2014. The 2015 statewide seat belt use rate of 89.0% has a standard error of +/- 1.00% (relative standard error = 1.12%), well within the standard requirement of 2.5% set forth by NHTSA. The peak for seat belt use in WV occurred in 2007, at a rate of 89.6%. All 14 counties had seat belt use rates between 80.0% and 95.0% in 2015, compared to five counties below 80% in 2013 and one in 2014.

Report Highlights...

• Observers recorded seat belt information on 20,312 drivers and 5,846 outboard front seat passengers for a total of 26,158 observations in 2015.

• The seat belt use rate in West Virginia steadily declined to 82.2% in 2013, before increasing in 2014 to 87.3% in 2014 and 89.0% in 2015.

• The 2015 seat belt use rate in WV is estimated at 89.0%, up nearly seven percentage points since 2013.

• Only one county had a seat belt use rate less than 80.0% in 2014, with Jefferson County at 76.5%. No counties had a seat belt use rate less than 80.0% in 2015.

• All 14 counties surveyed in 2014 had seat belt use rates above 75.0%. In 2015, all counties had a seat belt use rate above 80.0%.

• The seat belt use rate for *drivers only* in 2014 was 87.7%, increasing to 88.7% in 2015.

• Five counties had rates of use which exceeded ninety percent in 2015, including Cabell (94.6%), Jefferson (92.5%), Kanawha (91.5%), Mason (91.9%), and Mercer (95.0%).

• Substantial differences in driver and passenger use of seat belts across gender was found in 2014 and 2015. Generally, male passengers were *less* likely to use seat belts compared to females.

Organization of the Report

This report begins with a discussion of the sampling procedures and methods used to obtain an estimate of the seat belt use rate in WV. Procedures for the selection of counties, stratification of roadways, and observation sites are also described. This is followed by a presentation of the results beginning with the statewide seat belt use rate and trends over the past decade. A summary of the characteristics of occupants, vehicles, and observation sites is provided. This report concludes with an analysis of selected characteristics of vehicle occupants and observation sites. It is anticipated that this information will help to identify the conditions in which seat belts are more or less likely to be used in the state.

Report Highlights...

• Large differences in belt use between male and female *drivers* were observed in 2014 and 2015 for many counties. The rate of belt use among females exceeded that of males by 10 percentage points or greater in five counties (i.e., Boone, Harrison, Jackson, Mason, and Raleigh).

• Three counties (Cabell, Mason, and Monongalia) had a use rate for male *passengers* above 90.0% in 2014, with an increase to four counties in 2015 (Cabell, Jefferson, Mason, and Mercer).

• Pickup truck drivers and passengers were the least likely occupants to be observed wearing a seat belt in 2013, 2014, and 2015.

• The Eastern Panhandle observed large increases in seat belt use between 2013 and 2014, making it more similar in seat belt use rates in other regions of the state. In 2015, the Eastern Panhandle surpassed the North and South with the highest use rate at 91.0%.

• Drivers and passengers traveling on interstates and principle arterials had higher rates of use compared to other types of roadways in 2013, 2014, and 2015.

Methods

Data Collection

The National Highway Traffic Seat Administration (NHTSA) issued new Uniform Criteria for State Observational Surveys of Seat Belt Use in Federal Register Vol. 76, No. 63 (April 1, 2011, Rules and Regulations, pp. 18042 – 18059). The current report represents West Virginia's response to the requirement to submit to NHTSA a study and data collection protocol for an annual state survey to estimate passenger vehicle occupant restraint use. The current methodology is fully compliant with the Uniform Criteria and was utilized for the implementation of WV's 2015 seat belt survey.

The present survey design and methodology is similar to years past, but updated to meet NHTSA's updated requirements. The sample was selected using a multistage, stratified cluster sampling procedure. The State is divided into 55 counties, with passenger vehicle fatalities ranging from 117 in those five years (Kanawha County) to just 1 (Webster County). Thirty-three of the counties account for 85.6 percent of all passenger vehicle fatalities over those years. The present survey draws observation sites from 14 of those counties, the same sample size as in previous years. A total of 132 observation sites were selected resulting in 8 to 10 per county.

The 2015 observation survey design involved a five step process. The steps included: a) the selection of counties based on vehicle occupant fatalities and regions of the state; b) the stratification of roads based on functional use classes; c) the selection of specific road segments within each stratum and county; d) the development of seat belt use estimation procedures and computations; and e) the establishment of data collection and quality procedures consistent with NHTSA requirements.

County Selection. A total of 33 counties were identified as having the most passenger vehicle occupant fatalities between 2005 and 2009. These counties accounted for 85.6% of all fatalities during this time period. Of the 33 counties, a total of 14 were selected for inclusion in the 2015 observation survey representing all three regions of the state. The selection procedure involved dividing the state into three geographic regions, then allocating the number

of counties to be selected by region based on the number of qualified counties in the region, and within each region making probability proportional to size (PPS) selections with the odds of selection proportional to the county's total Daily Vehicle Miles Traveled, or DVMT. The selected counties and identified regions of the state are shown on the map in Appendix A.

Roadway Stratification and Definitions. To determine the distribution of the number of observation sites across counties, the 2015 survey design identified 132 total sites. A large number of observation sites were necessary to meet NHTSA's requirement of having a standard error no greater than 2.5%. The 132 sites were determined by the mix of counties and road type distributions within counties. Consistent with NHTSA guidelines, the 2015 survey excludes rural local roads in non-Metropolitan Statistical Area counties. Road strata include Interstates, Other Expressways, Other Principal Arterials, Minor Arterials, Collectors, and Local Roads (excluding rural local roads in non-MSA counties). Each of the 14 counties has road segments in four or all five road strata. The current survey utilizes two segments in each stratum, for a total of 8 to 10 segments per county.

Roadway Segment and Site Selection. To identify specific roadway segments, the approach involved a probability proportionate to size (PPS) procedure, with DVMT as the "size." Segments were randomly drawn from within county-stratum populations of road segments, with the probability of drawing any segment proportional to its proportion of the total DVMT within the county-stratum. Sampling called for selecting twice the number of road segments required, retaining the order of selection, in order to provide for the necessary sample and an equal number of alternates, or "spare" segments. A total of eight certainty segments among the 132 primary and alternate segments were selected and distributed across the roadway functional strata.

Prior to actual data collection, specific locations for data observations were selected based on visits to the locations, maps, and/or on-line road level images. The direction of travel to be observed was randomly selected for each segment and/or site. Sites were selected based on having a clear view of the vehicles and taking into account observer

Report Highlights...

• The *2015 West Virginia Observational Survey of Seat Belt* used a multi-stage, stratified cluster sampling procedure to identify 132 sites for vehicle and occupant observations.

• The National Highway Traffic Seat Administration (NHTSA) issued new Uniform Criteria for State Observational Surveys of Seat Belt Use in Federal Register Vol. 76, No. 63 (April 1, 2011, Rules and Regulations, pp. 18042 – 18059).

• The present survey design and methodology is similar to years past, but updated to meet NHTSA's updated

and traffic seat. Efforts were also made to select observation sites where traffic naturally slows in an effort to improve accuracy. When specific site locations were unusable or not able to provide a clear view of belt use, observers chose alternate locations within the road segment where they could more effectively observe the same traffic stream. Details and reasons for changing locations were documented. A complete list of selected primary road segments is provided in Appendix B.

Seat Belt Rate and Standard Error Calculations. Seat belt use rates were calculated using formulas based on the proportion of the state's total DVMT "represented" by the site. Seat belt use rate calculations followed a four-step process. First, estimated rates were calculated for each road type stratum within each county. The general formula for combining observed belt use rates from observation sites on individual segments, for a single county-stratum, is shown in formula (1).

This formula is used when the county-stratum contains certainty segments. The contribution of each segment to the overall county-stratum rate is proportional to the "size" of the segment's contribution to the entire county-stratum traffic (i.e., its DVMT, adjusted by the inverse of the probability of the segment's being selected into the sample):

$$p_{i(j)k} = \frac{\sum\limits_{l} DVMT_{i(j)k} W_{i(j)k} p_{i(j)k}}{\sum\limits_{l} DVMT_{i(j)k} W_{i(j)k}} \quad (1)$$

where $i(j)$ = county i within region j, k = stratum, l = site within stratum and county, $DVMT_{i(j)kl}$ = DVMT for segment l in county-stratum $i(j)k$, and $p_{i(j)kl}$ = the observed seat belt use rate at site $i(j)kl$ = $B_{i(j)kl}/O_{i(j)kl}$, where $B_{i(j)kl}$ = total number of belted occupants (drivers and outboard front seat passengers) observed at the site, $O_{i(j)kl}$ = total number of occupants with known belt use observed at the site; and $W_{i(j)kl}$ = the inverse of the probability of segment l's selection, as described above:

(certainty segments) $W_{i(j)kl}$ = 1.00 or (random segments)

$$W_{i(j)k} = \frac{\sum\limits_{m=1}^{N} DVMT_{i(j)klm}}{n * DVMT_{i(j)k}}$$

where N = total number of segments in county-stratum $i(j)k$ excluding the certainty segments and n = number of segments to be randomly selected excluding certainty segments.

In the case where there were no certainty segments in the county-stratum, formula (1) reduces to the simple formula (1a):

$$p_{i(j)k} = \sum\limits_{l=1}^{n_{i(j)k}} p_{i(j)k} / n_{i(j)k} \quad (1a)$$

where $i(j)$ = county i within region j, k = stratum, l = site within stratum and county, $n_{i(j)k}$ = number of sites within the stratum-county combination, and $p_{i(j)kl}$ = the observed seat belt use rate at site $i(j)kl$ = $B_{i(j)kl}/O_{i(j)kl}$, where $B_{i(j)kl}$ = total number of belted occupants (drivers and outboard front seat passengers) observed at the site, and $O_{i(j)kl}$ = total number of occupants with known belt use observed at the site.

Second, a county-by-county seat belt use rate, $p_{i(j)}$, was obtained by combining county-stratum seat belt use rates across strata within counties, weighted by the stratum's relative contribution to total county DVMT:

$$p_{i(j)} = \frac{\sum\limits_{k} DVMT_{i(j)k} p_{i(j)k}}{\sum\limits_{k} DVMT_{i(j)k}} \quad (2)$$

where $DVMT_{i(j)k}$ = the DVMT of all roads in stratum k in county $i(j)$, and $p_{i(j)k}$ = seat belt use rate for stratum k in county $i(j)$.

In the third step, category-weighted seat belt use rates for each region of counties will be obtained by combining and weighting the rates from the sampled counties in each region by their DVMT values and probabilities of being selected:

$$p_{j} = \frac{\sum\limits_{i} DVMT_{i(j)} W_{i(j)} p_{i(j)}}{\sum\limits_{i} DVMT_{i(j)} W_{i(j)}} \quad (3)$$

where $DVMT_{i(j)}$ = total DVMT for county i in region j and $W_{i(j)}$ = the inverse of the probability of the county's selection:

$$W_{i(j)} = \frac{\sum\limits_{l=1}^{N(j)} DVMT_{i(j)l}}{n_{i(j)} * DVMT_{i(j)}}$$

$W_{i(j)}$ = 1 for certainty counties and
where $N_{i(j)}$ = the number of high-fatality counties in region j and $n_{i(j)}$ = the number of those counties selected.

Finally, the statewide seat belt use proportion will be calculated by combining the category proportions weighted by their proportion of statewide DVMT:

$$p = \frac{\sum\limits_{j=1}^{3} DVMT_{j} p_{j}}{\sum\limits_{j=1}^{3} DVMT_{j}} \quad (4)$$

The result will be a combination of the individual site seat belt use rates weighted to reflect each site's importance in total state DVMT.

Standard error of estimate values were estimated through a jackknife approach, based on the general formula:

$$(5)$$

$$\hat{\sigma}_{\hat{p}} = [\frac{n-1}{n}\sum_{i=1}^{n}(\hat{p}_i - \hat{p})^2]^{1/2}$$

where $\hat{\sigma}_{\hat{p}}$ = standard deviation (standard error) of the estimated statewide seat belt use proportion $\hat{p}$ (equivalent to p in the notation of formulas 1-4), n = the number of sites, i.e., 132, and $\hat{p}_i$ = the estimated statewide seat belt use proportion with site i excluded from the calculation.

The relative error rate, i.e., $\hat{\sigma}_{\hat{p}}/\hat{p}$, was calculated, as well as the 95% confidence interval, i.e., $\hat{p} \pm 1.96\hat{\sigma}_{\hat{p}}$. These values are reported for the overall statewide seat belt use rate.

Procedures

Specific data collection procedures were established prior to the initiation of data collection. The procedures were guided by the updated 2011 Uniform Criteria for State Observational Surveys of Seat Belt Use established by NHTSA.

Seat Belt Observer Instruction and Data Collection Form. A two-page instruction form was developed for review by observers to ensure knowledge of the guidelines for conducting site observations (Appendix C). The Seat Belt Observer Instruction Form was provided to each site observer. Moreover, each observer was encouraged to review the guidelines on a periodic basis. The guidelines detailed some various aspects of survey data collection including:

- Length of observation period would be exactly 60 minutes;

- Vehicle types to include were passenger vehicles, including cars, pickup trucks, sport utility vehicles and vans;

- Observable occupants included drivers and oboard, front seat passengers. Children in a front seat child restraint would be excluded, however, children that are unrestrained and in the front seat would be counted;

- Each lane of traffic in one direction would be observed for an equal amount of time;

- On heavy traffic roadways, if traffic was moving too fast to observe every vehicle, a reference point up the road in the appropriate lane was to be picked. The focal point would indicate a next vehicle for observation after the last vehicle had been recorded;

- If rain, fog or inclement weather occurred, the observer was to wait 15 minutes to see if it would stop. If bad weather persisted, the site was to be rescheduled for another day upon the approval of a supervisor; and

- If construction compromised a site, the observer was told to move one block in either direction so that the same stream of traffic could be observed. If this would not work, an alternate site would be selected based on approval from a supervisor.

Observational details included exact location, direction of traffic to be observed, date, day of week, weather conditions, start time, type of vehicle, driver and passenger gender, and seat belt use. These data elements were requisite to 2015 data collection. A copy of WV's seat belt observation form is located in Appendix D.

Observers. Observers were hired and trained under the direction of the Governor's Highway Seat Program. These observers performed all field data collection. Prior to any data collection, all observers received approximately one day of training. The observers received classroom instruction and then spent several hours in the field practicing the observations. The accuracy of observers was determined by comparing the simultaneous observation of the same traffic by different observers, and differences were discussed and resolved. This approach has been used successfully over the last several years. Twelve individuals served as observers and two individuals acted as quality control monitors.

Training also included instruction on rescheduling

observations at a site when the original schedule was compromised (e.g., through inclement weather or temporary traffic disruption), and on obtaining and scheduling observations at an alternate site, if the original site cannot be used at all during the planned data collection period (e.g., due to construction). All rescheduling, whether at the same or an alternate site, matched the original schedule for time of day and day of week. Training sessions were held as close to initial dates for observation as possible so the observers' knowledge and skills were more likely to be intact.

Observation Schedule. Observations were conducted on all days of the week during daylight hours between 7:00 a.m. and 6:00 p.m. Clusters of four or five sites were scheduled for one observer on any day. The sites in each county were divided into two clusters, with road function strata balanced between clusters, and those clusters were scheduled for different days of the week, not both weekend days. The assignment of days of the week was balanced across similar counties so that all days of the week have roughly similar numbers of clusters. Within these constraints, actual day of week assignments were randomly determined.

The first site in any cluster to be observed each day was randomly selected, and the additional sites were assigned in an order which provides balance by type of site and time of day while minimizing travel distance and time. For each site, the schedule specified time of day, day of week, roadway to observe, and direction of traffic to observe.

Depending on the number of sites in a cluster, the time from 7 a.m. to 6 p.m. was divided into nearly equal-length time periods. For four-site days, time of day was specified as one of four time periods, such as 7 – 9:30 a.m., 9:30 a.m. – noon, noon – 3:30 p.m., and 3:30 – 6:00 p.m. Fewer sites in the cluster resulted in more time in each period. Exact timing of the periods was subject to adjustment so that the result were approximately equal numbers of sites being observed throughout the 7 a.m. – 6 p.m. time frame. In all cases, the period of actual seat belt observation lasted exactly one hour and was required to take place within the broader allowable time period.

Data Collection Form. Survey information was recorded on the Observational Survey Data Collection Form (see Appendix D). The data collection form was designed for use in the 2015 statewide survey of seat belt use. The form was designed so that pertinent site information could

be recorded. Information was gathered on the observation site as well as the vehicles and occupants observed. Each one-page form included space to record information on 70 vehicles. Observation site and other information captured on the Observational Survey Data Collection Form are summarized below.

Observation site:
- county and town
- site number and site notes
- date of observation and day of week
- direction of traffic flow (e.g., N, S, E, W)
- time of day (i.e., start time)
- weather conditions (i.e., clear/sunny, light rain, cloudy, fog, clear but wet)

Vehicle/Occupant:
- vehicle type (i.e., car, pick-up, SUV, van)
- driver gender
- passenger gender
- driver belt use/non-use (i.e., yes, no, unsure)
- passenger belt use/non- use (i.e., yes, no, unsure)

Data collectors were outfitted with a seat vest and clipboard, for personal seat. The seat vests had no identifying marks or logos. In particular, observers wore nothing that would suggest they are law enforcement personnel. Also, they were not accompanied by visible law enforcement personnel or equipment nor was there ever any kind of pre-notification that drivers are approaching a seat belt survey. Observers carried a letter authorizing their purpose and presence should law enforcement or others stop to question them.

Quality control monitors conducted random and visits that were unannounced visits to at least five percent of the observation sites for the purpose of quality control. The monitor helped to ensure that the observer was in place and making observations during the observation period. Where possible, the monitor remained undetected by the observer. Some of the persons leading the observer training also served as quality control monitors.

Results

The results of the analysis on the 25,987 vehicle and occupant observations made in 2015 are presented in this section. Extensive effort is made to summarize the characteristics of occupants, vehicles, and observation sites. The 2015 seat belt use rate based on the weighted sample of observations is also provided. In addition to the overall seat belt use rate, a description of the weighted belt use rate by roadway type (i.e., functional class), region, county, and vehicle type is presented. The presentation of the results begins with a description of the sample including the known and unknown number of occupants and their use of a seat belt as well as the nonresponse rate for the present survey. This is followed by a brief analysis of the total sample of both drivers and passengers by county.

Statewide Seat Belt Use and Nonresponse Rate

Table 1 provides a description of the number of occupants using and not using a seat belt and the statewide nonresponse rate. Seat belt use was able to be ascertained for a total of 25,987 occupants, including 20,181 drivers and 5,806 passengers. However, observers were not able to record seat belt use for 171 observations. This resulted in a statewide nonresponse rate of 0.65% for the 2015 survey, compared to a nonresponse rate of 7.68% for the 2013 survey.

Total Observed Front Seat Occupants

Table 2 displays the total number and percentage of observed front seat occupants. As shown in this table, a total of 20,312 drivers and 5,846 outboard front seat passerngers were observed. These observations were compiled across 132 observation sites and 14 counties. Greater than ten percent of observations occurred in three counties, including the counties of Berkeley (14.5%), Harrison (10.2%), and Monongalia (12.0%). These counties were followed by Wood (9.9%), Cabell (7.5%%), and Fayette (8.1%).

Similar to past surveys, four to six of the 14 counties contained approximately 5.0% of the total number of observations or less. The counties of Boone (3.8%), Kanawha (4.4%), Mason (3.7%), and Mercer (3.8%) had less than 5.0% of the total number of observations.

Weighted Seat Belt Use Rate

The seat belt use rate in West Virginia increased steadily between 2004 and 2008, followed by a 2.5% decline in 2009. In 2008, the weighted seat belt use rate reached a near high of 89.5%. This was roughly equal to the high of 89.6% achieved in 2007. The 2008 rate was up from 49.5% in 2000 and a low of 32.0% in 1992. A slight decline in the seat belt use rate occurred between 2008 and 2009, resulting in a statewide rate of 87.0%. The 2010 seat belt use rate

Table 1. Statewide Known and Unknown Seat Belt Use and Nonresponse Rate, 2015

| | **Number of Occupants...** | | | |
	Belted	**Unbelted**	**Unknown Use**	**%** **Unknown Use**
Drivers	18,059	2,122	131	0.65
Passengers	5,220	586	40	0.68
Total	23,279	2,708	171	0.65

declined further to 82.1%—the lowest observed rate since 2004—before rising again to 84.9% in 2011 and 84.0% in 2012. The seat belt rate for 2013 was 82.2%. The 2014 rate was 87.8%, nearly a 5% point increase from 2013 and only 2% less than the peak seat belt use rate recorded in 2007. This year, the seat belt rate has continued to rise, reaching a near 10-year high of 89.0% once again.

Graph 1 shows the rate of seat belt use over the eleven year period from 2005 to 2015. As shown in this graph, the seat belt use rate was at 84.9% in 2005. Over the next several years, the use rate increased to 89.6% prior to subsequent declines. From the low of 32.0% in 1992, the seat belt use rate increased 57.6 percentage points to 89.6% in 2007 before dropping three consecutive years to 82.1% in 2010. In 2011, the use rate increased nearly three percentage

points to 84.9% compared to a year ago before dropping to 84.0% in 2012 and 82.2% in 2013. In both 2014 and 2015 the seat belt use rate contined to increase to 87.8% and 89.0% respectively.

Figure 1 shows the statewide Jackknife variance calculation results for all vehicles and occupants. The statewide seat belt use rate of 89.0% has a standard error of +/- 1.00% (relative standard error = 1.12%), well within the standard requirement of 2.5% set forth by NHTSA. The 95% confidence interval ranges from a low of 87.08% to a high of 91.00%.

Weighted Seat Belt Use Rate by County

Table 3 displays the weighted seat belt use rate by county for 2013 to 2015. As shown in Table 3, no county had a seat

Table 2. Number and Percentage of Total Observed Front Seat Occupants, 2015 (N = 20,305)

County	Drivers		Passengers		Total	
	N	%	N	%	N	%
Berkeley	2741	13.5	1039	17.8	3780	14.5
Boone	803	4.0	194	194	997	3.8
Cabell	1534	7.6	417	417	1951	7.5
Fayette	1526	7.5	581	9.9	2107	8.1
Greenbrier	1015	5.0	286	4.9	1301	5.0
Harrison	2133	10.5	536	9.2	2659	10.2
Jackson	1046	5.1	304	5.2	1350	5.2
Jefferson	1214	6.0	321	5.5	1535	5.9
Kanawha	909	4.5	246	4.2	1155	4.4
Mason	725	3.6	232	4.0	957	3.7
Mercer	721	3.5	286	4.9	1007	3.8
Monongalia	2624	12.9	508	8.7	3132	12.0
Raleigh	1265	6.2	385	6.6	1650	6.3
Wood	2066	10.2	511	8.7	2577	9.9
Total	20312	100.0	5846	100.0	26158	100.0

Note: Totals may not add to 100.0% due to rounding.

Graph 1. Weighted Seat Belt Use Rate for All Vehicle Occupants in West Virginia, 2005-2015
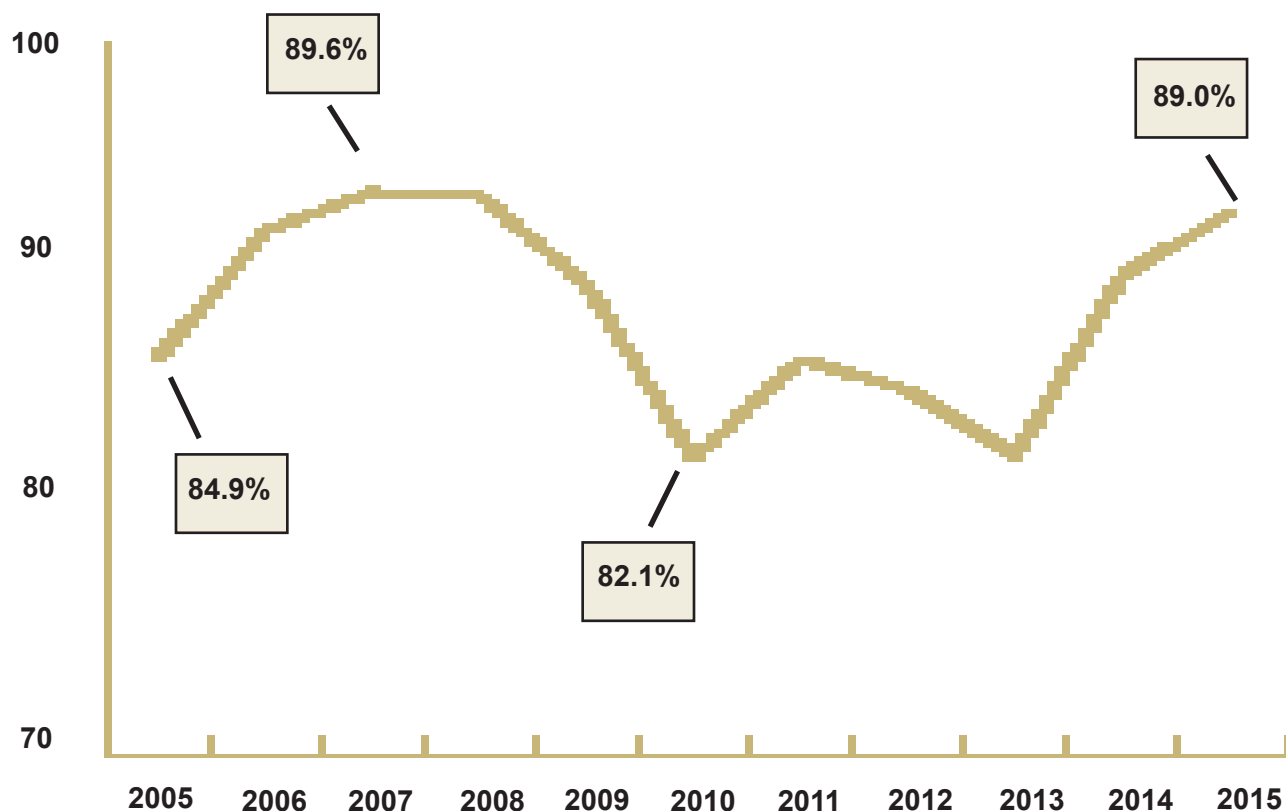
belt use rate less than 80.0%. This is a marked improvement from previous years where some counties' use rates were in the 60-70% range. On the contrary, several counties had use rates above 90.0% in 2015. This was not the case in 2013 where no counties had a use rate above 90.0%. In 2015, a total of five counties had use rates above 90.0%, constituting a record. Despite this substantive increase in use rates for some counties, six counties saw a decline in their use rates between 2014 and 2015.

A total of six counties had use rates above 85.0% in 2013, compared to 11 counties in 2014. In 2015, 13 of the 14 counties had use rates above 85.0%. As noted above, five counties had rates of use which exceeded ninety percent. These counties included Cabell (94.6%), Jefferson (92.5%), Kanawha (91.5%), Mason (91.9%), and Mercer (95.0%). The lowest rate of use was observed in Jackson County at 80.1% in 2015. Jefferson County had the lowest observed

use rate among drivers at 66.5% in 2014.

Characteristics of Belted Drivers and Passengers

The previous section presented the results of seat belt use for the state as well as by county. This section analyzes various characteristics of drivers and passengers and their relationship to belt use. The purpose is to identify variation in seat belt usage by occupant and site characteristics as well as vehicle type. It is anticipated that this information will help to identify the conditions in which seat belts are more or less likely to be used in the state.

Drivers Belted by Gender

Table 4 displays the weighted distribution of *drivers* seat belt use by gender in 2014 and 2015. As shown in this table, the seat belt use rate for drivers in 2014 was 87.3%, with Cabell (93.0%), Mercer (94.7%), Harrison (92.3%), and

observed wearing a seat belt in those counties. On a statewide basis, the use rates increased for males in 2014 was 84.9% compared to 91.9% for female drivers. In 2015, use rate increased for both genders, with 86.0% of male and 92.8% of female drivers observed using seat belts.

Passengers Belted by Gender

   Table 5 displays the results of seat belt use for *passengers* by gender in 2014 and 2015. Similar to the results for drivers, the findings illustrate that there are substantial gender differences in passenger use of seat belts across gender. Generally speaking, male passengers were *less* likely to use seat belts compared to females. As noted in Table 4, this was also the case for male drivers. This finding is consistent with previous observational surveys in WV over the past several

Monongalia (94.1%) counties having the highest rates of use among drivers. Jefferson County had the lowest observed use rate among drivers at 76.1% in 2014.

   In 2015, only the counties of Cabell (94.8%) and Mercer remained among the areas with the highest rate of use. However, in 2015, a few other counties had notable increases in seat belt use and became high use rate counties. These include the counties of Jefferson (91.9%), Kanawha (91.2%), and Mason (91.2%). Jackson County (80.4%) replaced Jefferson County as having the lowest observed seat belt use rate in 2015.

   This table further shows the differences in belt use rates for drivers by gender for 2014 and 2015. In the vast majority of counties, male drivers were much less likely to be observed wearing a seat belt compared to females, regardless of the year. In no county did the rate of use for males exceed that of female drivers in 2015. In 2014, only Mercer County had a rate of use for males (94.9%) that exceeded females (93.8%). Otherwise, most counties had large differences in belt use between male and female drivers. In both years (2014 and 2015), many counties observed gender differences in use which exceeded 10 percentage points. In 2015, the rate of female use exceeded that of males by 10 percentage points or more in five counties, including Boone, Harrison, Jackson, Mason, and Raleigh. In 2014, only three counties had use rates for females that exceeded male use rates by 10 percentage points or more. These included Cabell, Jefferson, and Kanawha counties. Males were much less likely to be

Table 3. Percent Weighted Seat Belt Use Rate for all Vehicle Occupants by County, 2013 to 2015

County	2013 Seat Belt Use Rate	2014 Seat Belt Use Rate	2015 Seat Belt Use Rate
Berkeley	75.5%	80.3%	89.6%
Boone	87.1%	84.7%	87.6%
Cabell	89.7%	93.7%	94.6%
Fayette	71.6%	87.2%	85.5%
Greenbrier	83.1%	87.2%	89.4%
Harrison	88.1%	92.4%	87.8%
Jackson	75.2%	89.0%	80.1%
Jefferson	63.8%	76.5%	92.5%
Kanawha	87.8%	86.6%	91.5%
Mason	82.4%	89.8%	91.9%
Mercer	88.2%	94.8%	95.0%
Monongalia	87.9%	94.5%	88.8%
Raleigh	76.9%	86.0%	83.3%
Wood	84.4%	87.0%	86.4%
Total	82.2%	87.8%	89.0%

Table 4. Percentage of Weighted Seat Belt Use for *Drivers* by County and Gender, 2014 and 2015

	2014				2015		
	Male %	**Female %**	**Total %**		**Male %**	**Female %**	**Total %**
Berkeley	77.7	84.5	80.4		86.0	94.5	89.4
Boone	81.0	94.9	85.7		82.6	94.2	88.0
Cabell	91.1	95.2	93.0		94.1	95.3	94.8
Fayette	85.5	93.7	87.4		84.3	87.5	85.3
Greenbrier	82.7	89.1	86.3		85.9	94.1	88.9
Harrison	88.7	97.7	92.3		83.0	96.4	87.8
Jackson	86.1	91.8	88.6		76.1	88.5	80.4
Jefferson	69.5	85.6	76.1		89.2	98.0	91.9
Kanawha	83.1	91.9	86.4		89.3	94.5	91.2
Mason	89.8	93.1	90.9		85.3	97.0	91.2
Mercer	94.9	93.8	94.7		90.3	97.9	93.1
Monongalia	90.6	98.3	94.1		85.3	93.3	88.6
Raleigh	85.3	85.5	85.9		85.6	74.8	83.1
Wood	83.4	90.6	86.7		83.2	91.5	86.1
Total	84.9	91.9	87.7		86.0	92.8	88.7

years.

The total seat belt use rate for all passengers observed was 90.2% in 2015, which is up from 88.0% in 2014. This is roughly a two percentage point increase from 2014 to 2015. Nevertheless, there still remains a gender gap in seat belt use. Male passengers continued to be substantially less likely to be observed wearing a seat belt. In 2014, only 82.2% of male passengers were observed wearing a seat belt, compared to 92.1% of female passengers. Similarly, in 2015, 85.5% of male passengers were observed wearing a seat belt compared to 92.8% of female passengers.

The rate of use for female passengers was higher than males in 11 of the 14 counties. In Jackson, Mason, and Mercer counties, the rate of use for males exceeded or equaled that of female passengers.

However, the rate of use for male and female passengers was especially low for some counties in 2015. In the case of female passengers, only 79.0% were observed wearing a seat belt in Jackson County. This is by far the lowest rate among female passengers. On the other hand, a very low rate of use was observed for male passengers in Raleigh County (70.7%) in 2015.

Drivers and Passengers Belted by Vehicle Type and Site Characteristics

Graph 6 displays the proportion of drivers and passengers belted by vehicle type and various site characteristics for 2014 and 2015. The results indicate that there was substantial variation in belt use across vehicle type, region, and functional class. Likewise, there were differences in use for these vehicle and site characteristics between drivers and passengers.

In the case of vehicle type, both pickup truck drivers and passengers were the least likely to be observed wearing

Table 5. Percentage of Weighted Seat Belt Use for *Passengers* by County and Gender, 2014 and 2015

| | 2014 | | | | 2015 | | |
	Male %	Female %	Total %		Male %	Female %	Total %
Berkeley	71.7	84.7	79.9		84.2	93.4	90.9
Boone	74.2	86.7	79.3		70.5	93.7	86.0
Cabell	94.1	97.4	96.7		91.7	93.9	93.6
Fayette	85.6	93.6	89.7		85.3	86.6	86.5
Greenbrier	82.7	95.1	91.3		86.5	93.9	91.8
Harrison	72.3	98.4	80.8		83.5	92.0	88.9
Jackson	84.6	92.5	89.9		81.7	79.0	79.9
Jefferson	64.3	86.6	79.4		93.7	97.7	95.7
Kanawha	75.0	94.7	85.9		86.3	97.5	92.7
Mason	96.7	74.6	87.2		94.7	88.8	92.2
Mercer	89.7	99.9	96.2		100.0	100.0	100.0
Monongalia	94.0	97.3	96.6		82.7	95.2	90.7
Raleigh	86.8	90.5	89.8		70.7	92.7	82.2
Wood	85.9	93.4	90.8		85.1	88.8	88.8
Total	82.2	92.1	88.0		85.5	92.8	90.2

a seat belt in 2014 and 2015. The total seat belt use rate for pickup truck occupants was 82.6% in 2014 and 83.7% in 2015. The rate of use for pickup truck passengers was 85.2%, compared to 83.6% for drivers in 2015. Similar results were found in 2014 with 84.1% of passengers and 82.6% of drivers observed wearing a seat belt. Thus, despite the increase in seat belt use for both drivers and passengers generally, pickup truck occupants were *less* likely to be observed wearing a seat belt compared to other vehicle types in both years.

There were also substantial differences in use rates by region of the state. Historically, rates of seat belt use have been lower in the Eastern Panhandle, compared to the Northern and Southern regions of the state. The rate of use in the Eastern Panhandle for 2013 was only 69.8%, compared to 83.6% in the North and 84.1% in South. In 2013, these differences held true across both drivers and passengers

with only 68.3% of passengers and 70.7% of drivers being observed wearing a seat belt in the Eastern Panhandle. This is compared to over 80.0% of drivers and passengers observed wearing belts in the other two regions of the state.

In 2014, however, the rate of use across regions became more similar due to a large increase in belted occupants in the Eastern Panhandle. All three regions had use rates above eighty percent in 2014, with the North leading the way at 90.5%. Both the Eastern Panhandle and South had an observed rate of use at 87.8%.

Reversing previous trends, the seat belt rate in the Eastern Panhandle exceeded other regions of the state in 2015. Over ninety percent (91.0%) of observed occupants in the Eastern Panhandle were using a seat belt, compared to the North (87.0%) and South (89.9%) regions of the state at less than ninety percent.

Similar to previous years, rates of seat belt use also vary

across roadway type or functional class in the state. The highest rate of use has historically been found on interstate and other principle arterials. This remained the case for both 2014 and 2015. In 2014, drivers and passengers traveling on interstates (90.8%) and principle arterials (90.2%) were more likely to be observed wearing a seat belt compared to other types of roadways. This finding was true for both drivers and passengers.

In 2015, we see a similar pattern with 92.6% and 93.1% of observed occupants wearing a seat belt on interstates and principle arterials, respectively. Greater than ninety percent of drivers and passengers traveling on interstates and principle arterial roadways were observed wearing seat belts in 2015. Vehicle occupants traveling on collectors and local roads were least likely to be wearing a seat belt in 2014 and 2015. An increase in seat belt use from 2014 to 2015 was observed for all roadway types, with the exception of collectors. Seat belt use declined by a little over one percent (1.1%) for motorists traveling on collector roadways in 2015.

Table 6. Weighted Seat Belt Use Rate for Drivers and Passengers by Vehicle Type and Site Characteristics, 2014 and 2015

Vehicle Type and Site Characteristics	2014			2015		
	Driver %	Passenger %	Total %	Driver %	Passenger %	Total %
Vehicle Type						
Car	89.3	89.8	89.4	89.0	90.9	89.3
Pickup Truck	82.6	84.1	82.6	83.6	85.2	83.7
SUV	90.8	91.8	91.2	93.1	93.6	93.2
Van	93.4	87.4	92.3	90.4	91.5	90.5
Region						
Eastern Panhandle	87.7	88.0	87.8	90.6	93.2	91.0
North	90.5	89.1	90.5	86.8	88.1	87.0
South	88.2	88.0	87.8	89.5	90.8	89.9
Functional Class						
Interstate	90.3	93.1	90.8	92.2	93.9	92.6
Other Principle Arterials	89.9	92.1	90.2	92.8	94.7	93.1
Minor Arterials	86.9	85.9	86.9	89.1	88.4	88.9
Collectors	85.8	85.9	85.9	85.4	82.3	84.8
Qualified Local Road	85.9	82.9	85.4	85.4	90.5	86.5

Appendices
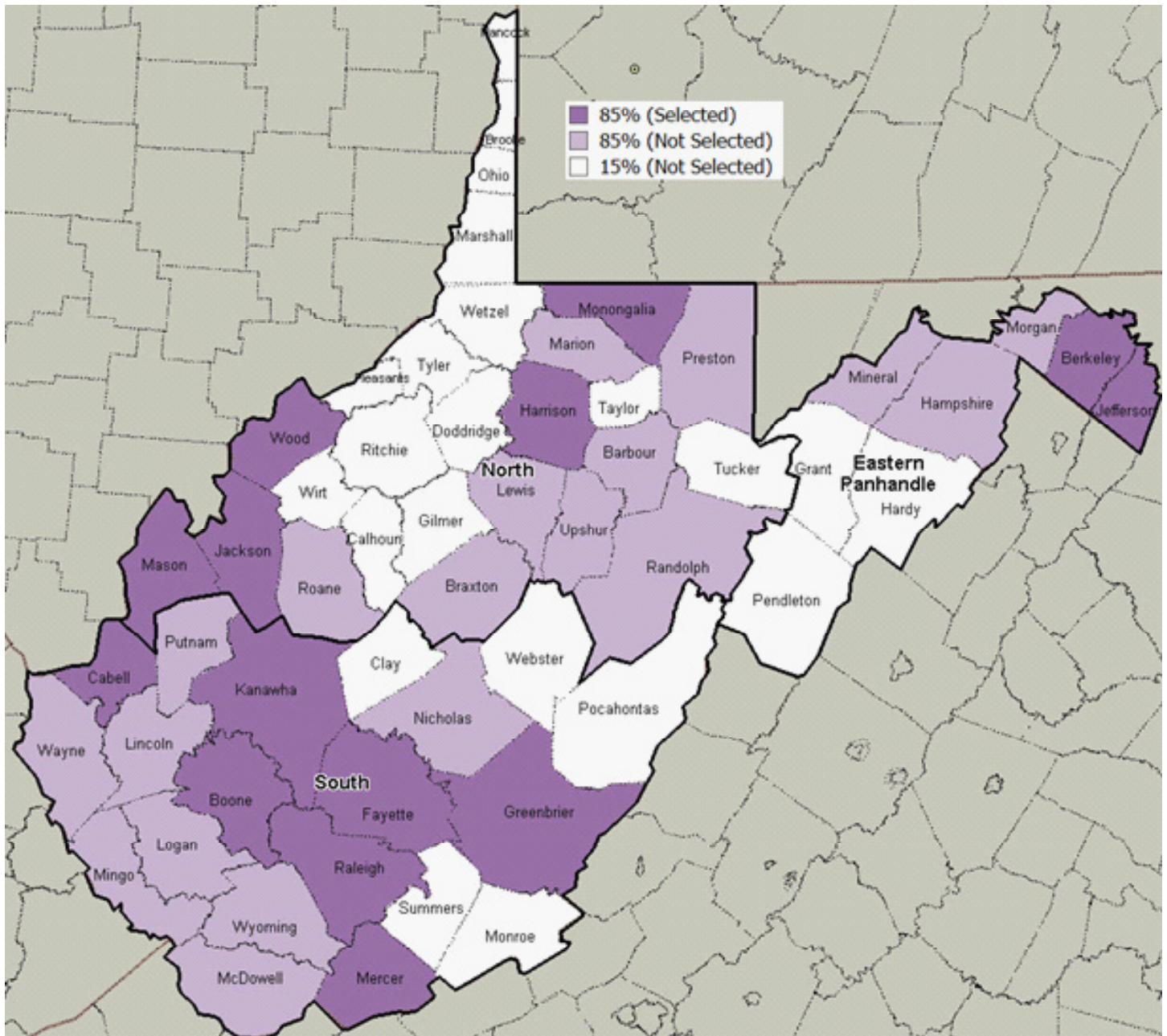
Appendix B: Selected Primary Road Segments and Observational Survey Site List

	County	MSA?		Road Stratum	Urban Name	Rd Fctn Class	Route/ SubRoute	Begin Mile	Segment Length	AADT	DVMT	Prob (select)	Seln Order
2	Berkeley	Yes	1	Intst/ Xway	Small Urban	11	0081/00	1.39	4.88	47,340	231,019.20	0.6617	1
2	Berkeley	Yes	1	Intst/ Xway	Hagerstown	11	0081/00	16.23	1.07	58,576	62,676.32	0.1795	2
2	Berkeley	Yes	2	Oth Prin Art	Hagerstown	14	0009/00	15.27	0.30	34,353	10,305.90	0.1127	1
2	Berkeley	Yes	2	Oth Prin Art	Hagerstown	14	0009/00	15.79	0.30	34,353	10,305.90	0.1127	2
2	Berkeley	Yes	3	Minor Art	Hagerstown	16	0045/00	14.52	0.33	36,583	12,072.39	0.1164	1
2	Berkeley	Yes	3	Minor Art	Hagerstown	16	4259/00	0.32	0.08	6,097	487.76	0.0047	2
2	Berkeley	Yes	4	Collector	Rural	7	0051/00	5.40	3.94	16,573	65,297.62	0.6602	1
2	Berkeley	Yes	4	Collector	Small Urban	17	0034/00	0.00	1.44	5,533	7,967.52	0.0806	2
2	Berkeley	Yes	5	Local Road	Rural	9	0009/18	0.00	1.64	2,749	4,508.36	0.0804	1
2	Berkeley	Yes	5	Local Road	Rural	9	0030/00	1.30	2.87	3,156	9,057.72	0.1615	2
3	Boone	Yes	2	Oth Prin Art	Rural	2	0119/00	13.54	2.61	19,400	50,634.00	0.6382	1
3	Boone	Yes	2	Oth Prin Art	Rural	2	0119/00	11.49	1.34	13,195	17,681.30	0.2229	2
3	Boone	Yes	3	Minor Art	Rural	6	0085/00	14.74	7.44	3,700	27,528.00	0.6844	1
3	Boone	Yes	3	Minor Art	Rural	6	0085/00	22.22	5.59	4,600	25,714.00	0.6393	2
3	Boone	Yes	4	Collector	Rural	7	0003/00	23.09	1.99	6,900	13,731.00	0.1829	1
3	Boone	Yes	4	Collector	Rural	7	0001/00	8.58	1.87	1,800	3,366.00	0.0448	2
3	Boone	Yes	5	Local Road	Rural	9	0022/00	0.00	2.08	850	1,768.00	0.1279	1
3	Boone	Yes	5	Local Road	Rural	9	0007/02	0.05	0.90	150	135.00	0.0098	2
6	Cabell	Yes	1	Intst/ Xway	Huntington	11	0064/00	14.57	3.11	42,500	132,175.00	0.5502	1
6	Cabell	Yes	1	Intst/ Xway	Huntington	11	0064/00	27.55	1.12	32,500	36,400.00	0.1515	2
6	Cabell	Yes	2	Oth Prin Art	Rural	2	0002/00	14.38	3.61	5,400	19,494.00	0.1380	1
6	Cabell	Yes	2	Oth Prin Art	Huntington	14	0060/00	4.02	1.74	18,200	31,668.00	0.2241	2
6	Cabell	Yes	3	Minor Art	Huntington	16	0101/01	0.00	0.69	12,000	8,280.00	0.0594	1
6	Cabell	Yes	3	Minor Art	Huntington	16	0060/00	12.37	0.76	15,000	11,400.00	0.0817	2
6	Cabell	Yes	4	Collector	Rural	7	0011/00	2.81	3.07	900	2,763.00	0.0526	1

Appendix B: Seat Belt Observational Survey Site List (Continued)

	County	MSA?		Road Stratum	Urban Name	Rd Fctn Class	Route/ SubRoute	Begin Mile	Segment Length	AADT	DVMT	Prob (select)	Seln Order
6	Cabell	Yes	4	Collector	Rural	7	0029/00	4.48	3.84	600	2,304.00	0.0439	2
6	Cabell	Yes	5	Local Road	Huntington	19	0160/21	0.00	0.87	7,200	6,264.00	0.2187	1
6	Cabell	Yes	5	Local Road	Rural	9	0001/00	12.07	2.01	150	301.50	0.0105	2
10	Fayette	No	1	Intst/ Xway	Rural	1	0077/00	55.02	3.30	28,692	94,683.60	0.8661	1
10	Fayette	No	1	Intst/ Xway	Rural	1	0077/00	62.73	3.42	30,741	105,134.22	0.9617	2
10	Fayette	No	2	Oth Prin Art	Small Urban	14	0019/00	11.25	1.70	24,286	41,286.20	0.3975	1
10	Fayette	No	2	Oth Prin Art	Small Urban	14	0019/00	3.89	2.27	17,051	38,705.77	0.3726	2
10	Fayette	No	3	Minor Art	Small Urban	16	0016/00	9.71	1.39	9,613	13,362.07	0.1857	1
10	Fayette	No	3	Minor Art	Small Urban	16	0016/00	9.06	0.52	9,613	4,998.76	0.0695	2
10	Fayette	No	4	Collector	Rural	7	0041/00	13.28	6.45	911	5,875.95	0.0874	1
10	Fayette	No	4	Collector	Rural	7	0016/00	29.33	1.24	2,631	3,262.44	0.0485	2
10	Fayette	No	5	Local Road	Small Urban	19	0019/01	0.00	2.26	1,315	2,971.90	0.6744	1
10	Fayette	No	5	Local Road	Small Urban	19	0025/01	0.95	0.61	304	185.44	0.0421	2
13	Greenbrier	No	1	Intst/ Xway	Rural	1	0064/00	149.84	6.34	12,523	79,395.82	0.6655	1
13	Greenbrier	No	1	Intst/ Xway	Rural	1	0064/00	156.18	5.28	14,605	77,114.40	0.6463	2
13	Greenbrier	No	2	Oth Prin Art	Rural	2	0219/00	14.34	1.40	9,447	13,225.80	0.2663	1
13	Greenbrier	No	2	Oth Prin Art	Rural	2	0219/00	21.86	3.61	2,946	10,635.06	0.2141	2
13	Greenbrier	No	3	Minor Art	Rural	6	0060/00	12.43	1.76	6,298	11,084.48	0.1566	1
13	Greenbrier	No	3	Minor Art	Rural	6	0060/00	14.19	0.65	5,993	3,895.45	0.0550	2
13	Greenbrier	No	4	Collector	Rural	8	0046/00	0.00	2.09	203	424.27	0.0119	1
13	Greenbrier	No	4	Collector	Rural	7	0063/00	3.00	3.06	3,149	9,635.94	0.2692	2
13	Greenbrier	No	5	Local Road	Small Urban	19	0045/00	1.04	3.52	356	1,253.12	0.6860	1
13	Greenbrier	No	5	Local Road	Small Urban	19	0060/13	0.53	1.85	1,219	2,255.15	1.0000	2
17	Harrison	No	1	Intst/ Xway	Rural	1	0079/00	125.80	3.42	40,740	139,330.80	0.6831	1
17	Harrison	No	1	Intst/ Xway	Small Urban	11	0079/00	119.53	1.19	48,180	57,334.20	0.2811	2
17	Harrison	No	2	Oth Prin Art	Small Urban	14	0050/00	11.38	0.91	16,759	15,250.69	0.1736	1
17	Harrison	No	2	Oth Prin Art	Small Urban	14	0050/00	13.25	0.53	23,731	12,577.43	0.1431	2
17	Harrison	No	3	Minor Art	Small Urban	16	0019/00	24.75	0.91	12,908	11,746.28	0.0742	1

	County	MSA?		Road Stratum	Urban Name	Rd Fctn Class	Route/ SubRoute	Begin Mile	Segment Length	AADT	DVMT	Prob (select)	Seln Order
17	Harrison	No	3	Minor Art	Small Urban	16	0050/00	19.21	0.44	19,619	8,632.36	0.0545	3
17	Harrison	No	3	Minor Art	Small Urban	16	0058/00	3.52	1.69	4,337	7,329.53	0.0463	4
17	Harrison	No	4	Collector	Small Urban	17	1779/00	1.00	0.18	1,342	241.56	0.0034	3
17	Harrison	No	4	Collector	Rural	7	0050/73	2.42	0.46	4,853	2,232.38	0.0311	4
17	Harrison	No	5	Local Road	Small Urban	19	0042/00	0.03	0.92	711	654.12	0.1135	3
17	Harrison	No	5	Local Road	Small Urban	19	0050/39	0.00	2.71	2,462	6,672.02	1.0000	4
18	Jackson	No	1	Intst/ Xway	Rural	1	0077/00	122.73	2.19	19,500	42,705.00	0.2436	3
18	Jackson	No	1	Intst/ Xway	Rural	1	0077/00	145.99	4.46	14,832	66,150.72	0.3774	4
18	Jackson	No	2	Oth Prin Art	Rural	2	0002/00	2.76	1.12	4,100	4,592.00	0.2327	3
18	Jackson	No	2	Oth Prin Art	Rural	2	0033/00	1.31	1.84	11,600	21,344.00	1.0000	4
18	Jackson	No	3	Minor Art	Rural	6	0033/00	13.32	8.10	4,700	38,070.00	1.0000	3
18	Jackson	No	3	Minor Art	Rural	6	0062/00	7.90	5.01	9,000	45,090.00	1.0000	4
18	Jackson	No	4	Collector	Rural	7	0034/00	0.00	3.86	750	2,895.00	0.0516	3
18	Jackson	No	4	Collector	Rural	7	0007/00	0.00	3.00	800	2,400.00	0.0428	4
19	Jefferson	Yes	2	Oth Prin Art	Rural	2	0340/00	10.41	1.45	39,718	57,591.10	0.4398	3
19	Jefferson	Yes	2	Oth Prin Art	Rural	2	0340/00	15.31	0.72	24,144	17,383.68	0.1328	4
19	Jefferson	Yes	3	Minor Art	Small Urban	16	0051/00	5.40	1.63	7,852	12,798.76	0.2521	3
19	Jefferson	Yes	3	Minor Art	Rural	6	0480/00	5.34	0.29	8,472	2,456.88	0.0484	4
19	Jefferson	Yes	4	Collector	Rural	7	0051/00	1.53	2.40	7,807	18,736.80	0.2371	3
19	Jefferson	Yes	4	Collector	Rural	7	0004/00	0.00	1.70	3,082	5,239.40	0.0663	4
19	Jefferson	Yes	5	Local Road	Rural	9	0001/08	2.85	0.38	1,033	392.54	0.0131	3
19	Jefferson	Yes	5	Local Road	Rural	9	0340/00	0.14	0.91	4,856	4,418.96	0.1475	4
20	Kanawha	Yes	1	Intst/ Xway	Rural	1	0077/00	110.13	0.65	20,500	13,325.00	0.0172	3
20	Kanawha	Yes	1	Intst/ Xway	Charleston	11	0064/00	52.38	0.35	70,500	24,675.00	0.0318	4
20	Kanawha	Yes	2	Oth Prin Art	Charleston	14	0119/00	11.34	1.56	46,200	72,072.00	0.2058	3
20	Kanawha	Yes	2	Oth Prin Art	Charleston	14	0061/00	21.25	0.13	20,700	2,691.00	0.0077	4
20	Kanawha	Yes	3	Minor Art	Charleston	16	0025/00	5.95	1.43	10,600	15,158.00	0.0572	3
20	Kanawha	Yes	3	Minor Art	Charleston	16	0012/00	5.10	0.54	12,200	6,588.00	0.0248	4

Appendix B: Seat Belt Observational Survey Site List (Continued)

	County	MSA?		Road Stratum	Urban Name	Rd Fctn Class	Route/ SubRoute	Begin Mile	Segment Length	AADT	DVMT	Prob (select)	Seln Order
20	Kanawha	Yes	4	Collector	Rural	7	0021/00	2.82	5.19	9,600	49,824.00	0.3405	3
20	Kanawha	Yes	4	Collector	Charleston	17	0079/03	12.57	6.30	6,600	41,580.00	0.2841	4
20	Kanawha	Yes	5	Local Road	Charleston	19	0214/14	0.00	0.07	12,000	840.00	0.0123	3
20	Kanawha	Yes	5	Local Road	Rural	9	0033/04	0.00	1.38	100	138.00	0.0020	4
27	Mason	No	2	Oth Prin Art	Rural	2	0002/00	13.72	2.21	7,200	15,912.00	0.1645	3
27	Mason	No	2	Oth Prin Art	Rural	2	0035/00	11.66	0.32	11,800	3,776.00	0.0390	4
27	Mason	No	3	Minor Art	Rural	6	0062/00	26.84	3.99	4,400	17,556.00	0.4990	3
27	Mason	No	3	Minor Art	Rural	6	0062/00	22.58	0.94	8,900	8,366.00	0.2378	4
27	Mason	No	4	Collector	Rural	8	0072/00	0.00	2.45	400	980.00	0.0255	3
27	Mason	No	4	Collector	Rural	8	0013/00	6.56	1.17	1,100	1,287.00	0.0335	4
27	Mason	No	5	Local Road	Small Urban	19	0015/13	0.00	0.23	60	13.80	0.0386	3
27	Mason	No	5	Local Road	Small Urban	19	0035/11	0.37	0.57	200	114.00	0.3193	4
28	Mercer	No	1	Intst/ Xway	Rural	1	0077/00	19.69	7.57	27,096	205,116.72	1.0000	3
28	Mercer	No	1	Intst/ Xway	Rural	1	0077/00	13.74	5.95	27,593	164,178.35	0.9863	4
28	Mercer	No	2	Oth Prin Art	Small Urban	14	0052/00	10.62	0.16	11,645	1,863.20	0.0124	3
28	Mercer	No	2	Oth Prin Art	Small Urban	14	0460/00	1.33	1.57	18,733	29,410.81	0.1964	4
28	Mercer	No	3	Minor Art	Small Urban	16	0020/00	12.78	4.82	9,339	45,013.98	0.4854	3
28	Mercer	No	3	Minor Art	Small Urban	16	0052/25	0.00	0.55	12,892	7,090.60	0.0765	4
28	Mercer	No	4	Collector	Small Urban	17	0019/33	0.12	0.94	5,668	5,327.92	0.0728	3
28	Mercer	No	4	Collector	Rural	7	0071/00	0.00	3.01	5,668	17,060.68	0.2332	4
28	Mercer	No	5	Local Road	Small Urban	19	0014/00	0.63	1.97	2,126	4,188.22	1.0000	3
28	Mercer	No	5	Local Road	Small Urban	19	0044/10	0.97	1.32	992	1,309.44	0.4446	4
31	Monongalia	Yes	1	Intst/ Xway	Morgantown	11	0079/00	152.32	0.60	40,771	24,462.60	0.0861	3
31	Monongalia	Yes	1	Intst/ Xway	Rural	1	0068/00	9.40	1.39	26,085	36,258.15	0.1276	4
31	Monongalia	Yes	2	Oth Prin Art	Morgantown	14	0019/00	12.52	0.63	17,013	10,718.19	0.0893	3
31	Monongalia	Yes	2	Oth Prin Art	Rural	2	0007/00	13.71	0.04	4,565	182.60	0.0015	4
31	Monongalia	Yes	3	Minor Art	Morgantown	16	0007/00	35.76	0.79	22,205	17,541.95	0.1571	3
31	Monongalia	Yes	3	Minor Art	Morgantown	16	0857/00	8.42	2.43	6,713	16,312.59	0.1461	4

	County	MSA?		Road Stratum	Urban Name	Rd Fctn Class	Route/ SubRoute	Begin Mile	Segment Length	AADT	DVMT	Prob (select)	Seln Order
31	Monongalia	Yes	4	Collector	Rural	7	0019/00	5.89	2.22	5,101	11,324.22	0.1248	3
31	Monongalia	Yes	4	Collector	Morgantown	17	0061/04	0.45	0.46	11,411	5,249.06	0.0579	4
31	Monongalia	Yes	5	Local Road	Rural	9	0073/02	0.00	0.76	52	39.52	0.0014	3
31	Monongalia	Yes	5	Local Road	Rural	9	0046/00	0.00	0.75	934	700.50	0.0248	4
41	Raleigh	No	1	Intst/ Xway	Rural	1	0064/00	124.47	2.18	21,578	47,040.04	0.1616	3
41	Raleigh	No	1	Intst/ Xway	Rural	1	0064/00	132.84	4.64	14,288	66,296.32	0.2277	4
41	Raleigh	No	2	Oth Prin Art	Small Urban	14	0016/00	14.72	0.36	27,603	9,937.08	0.1469	3
41	Raleigh	No	2	Oth Prin Art	Small Urban	14	0041/00	1.85	0.14	7,002	980.28	0.0145	4
41	Raleigh	No	3	Minor Art	Small Urban	16	0019/00	14.96	2.01	10,757	21,621.57	0.1422	3
41	Raleigh	No	3	Minor Art	Small Urban	16	0041/00	2.51	2.15	7,002	15,054.30	0.0990	4
41	Raleigh	No	4	Collector	Small Urban	17	0019/03	0.98	2.64	3,958	10,449.12	0.1003	3
41	Raleigh	No	4	Collector	Small Urban	17	0067/00	0.00	0.31	2,537	786.47	0.0075	4
41	Raleigh	No	5	Local Road	Small Urban	19	0016/14	2.71	0.49	2,131	1,044.19	0.1339	3
41	Raleigh	No	5	Local Road	Small Urban	19	0004/00	0.00	0.63	1,421	895.23	0.1148	4
54	Wood	Yes	1	Intst/ Xway	Rural	1	0077/00	173.94	2.52	18,000	45,360.00	0.3490	3
54	Wood	Yes	1	Intst/ Xway	Rural	1	0077/00	176.76	1.24	21,500	26,660.00	0.2051	4
54	Wood	Yes	2	Oth Prin Art	Parkersburg	14	0050/00	3.43	1.87	26,500	49,555.00	0.2643	3
54	Wood	Yes	2	Oth Prin Art	Parkersburg	14	0014/00	18.24	1.67	14,100	23,547.00	0.1256	4
54	Wood	Yes	3	Minor Art	Parkersburg	16	0618/00	0.00	0.06	13,000	780.00	0.0068	3
54	Wood	Yes	3	Minor Art	Parkersburg	16	0032/00	0.25	0.52	6,300	3,276.00	0.0285	4
54	Wood	Yes	4	Collector	Rural	7	0047/00	5.18	1.12	7,900	8,848.00	0.1223	3
54	Wood	Yes	4	Collector	Rural	7	0021/00	6.81	1.79	4,200	7,518.00	0.1039	4
54	Wood	Yes	5	Local Road	Rural	9	0001/04	0.00	0.19	300	57.00	0.0026	3
54	Wood	Yes	5	Local Road	Parkersburg	19	0014/01	0.00	1.39	1,600	2,224.00	0.1018	4

Appendix C: Seat Belt Observer Instructions

- Qualifying vehicles include passenger automobiles, pickup trucks, recreational vehicles, jeeps, and vans (private, public, and commercial). Pickup trucks should be coded as "trucks". Jeeps, Broncos, Blazers, and other vehicles of that type should be coded as sport utility vehicles (SUVs). Recreational vehicles that are pickup or van "conversions" should be coded as a pickup or van. Do not include large trucks or buses or vehicles over 10,000 lbs. gwv. Eligible vehicles should be observed regardless of the state in which they are registered.

- Belt use will be observed for front seat occupants only. Observe and record data for the driver and passenger in the right front seat. If there is more than one front seat passenger, observe only the "outside" passenger. Do not record data for passengers in the back seat or for a passenger riding in the middle of the front seat.

- If a child is present in the front seat in a child restraint seat, do not record anything. However, children riding in the right front seat, regardless of age, who are not in child restraint seats should be observed as any other right front seat passenger. Children in booster seats should be observed.

- Each observation period will last for exactly 1 hour.

The following procedures will be used in conducting observations of seat belt use:

1. As you observe a qualifying vehicle, record the type of vehicle (car, truck, SUV, van), the occupants' sex (male, female, unknown), and shoulder restraint use (yes, no, unknown) of the front seat occupants (driver and front seat "outside" passenger only). If there is no qualified passenger, leave the passenger fields blank. If you cannot tell whether there is a qualified right front seat passenger, code "??" in the passenger gender box.

2. Code restrained if you observe the shoulder belt properly positioned over the shoulder. If you notice a lap belt in use without a shoulder belt, it should be recorded as not restrained. Only shoulder belts are to be counted. Even if the vehicle likely has no shoulder belts, code the occupant(s) as not restrained.

3. If the person is using the shoulder belt improperly, e.g., has the shoulder strap under his/her arm or behind the back, this should be recorded as not restrained. If you can't tell shoulder belt use at all, code unknown.

4. If there are multiple lanes in the "observed direction" and traffic is too dense to code all lanes at once, observe traffic in each lane for an equal amount of time, and in the direction specified, throughout the 1-hour observation time period.

5. In many situations, it will be possible to observe every vehicle. However, if there is too much traffic for you to observe every vehicle, you should determine a reference point up the road. Observe the next qualified vehicle to pass the reference point after the last vehicle has been coded.

6. Do not observe if rain, fog, or other inclement weather makes it impossible to do so safely or accurately. If you arrive at a site and it begins to rain, do not collect data in the rain. Find a dry place and wait up to 15 minutes to see if the rain stops. If the rain does stop, begin observing again and extend the observation period to make up for the time missed. Otherwise, you will have to contact your supervisor to reschedule the site. (Note: You may continue observations in light fog, drizzle, or mist.)

7. If more than one data sheet is used, staple the sheets together at the end of the observation period and note the number of sheets used at the top of the first data page.

8. It may happen that the site you are assigned is seriously compromised due to construction or special activity. If this occurs, you may move one block in either direction on the same street such that you are observing the same stream of traffic that would have normally been observed had there been no obstruction. If moving one block will not solve the problem, then do not conduct the observation. Notify your supervisor; an alternate site will be selected and scheduled and observed at a future time.

Appendix C: Seat Belt Observer Instructions (Continued)

The following procedures will be used in rescheduling observations of seat belt use:

1) If the site is <u>temporarily</u> unusable, e.g., due to bad weather or temporary traffic congestion or blockage:

    a) Inform your supervisor of the problem as soon as practical.

    b) With your supervisor's assistance, reschedule the <u>same</u> site to be observed at the same time of day and day of the week.

2) If the site cannot be used during this observation schedule, e.g., due to long-lasting construction:

    a) Inform your supervisor of the problem as soon as practical.

    b) With your supervisor's assistance, schedule an equivalent <u>alternate</u> site to be observed at the same time of day and day of the week. The alternate site must be in the same county and of the same roadway type. Your supervisor will provide a specific alternate site to be observed; you may not simply pick any other roadway to observe.

Appendix D: Observational Survey Data Collection Form

COUNTY: _____ TOWN: _____ SITE NUMBER: _____

SITE NOTES: _____

DATE: _____ – _____ – _____ DAY OF WEEK: _____

WEATHER CONDITIONS
1 Clear / Sunny   4 Fog
2 Light Rain   5 Wet but Not
3 Cloudy   Raining

DIRECTION OF TRAFFIC FLOW OBSERVED (Circle one): N   S   E   W

START TIME:_____ (Observation period will last exactly 1 hour)

	Vehicle C = car T = truck S = SUV V = van	Sex M = male F = female U = unsure	Use Y = yes N = no U = unsure	Sex M = male F = female U = unsure use ?? = unsure if present	Use Y = yes N = no U = unsure		Vehicle C = car T = truck S = SUV V = van	Sex M = male F = female U = unsure	Use Y = yes N = no U = unsure	Sex M = male F = female U = unsure sex ?? = unsure if present	Use Y = yes N = no U = unsure
Veh. #		DRIVER		PASSENGER		Veh. #		DRIVER		PASSENGER	
1						36					
2						37					
3						38					
4						39					
5						40					
6						41					
7						42					
8						43					
9						44					
10						45					
11						46					
12						47					
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WV OBSERVATIONAL SEAT BELT SURVEY
FORM 2012